

Before The
Federal Communications Commission
Washington, D.C. 20554

In the Matter of:

Creation of a Low
Power Radio Service

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MM Docket No. 99-25

TO: Chief, Mass Media Bureau

The Comments of John Babina, Jr.

August 2, 1999

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Summary

The proposal for some type of a low power service has merit. The proposal, as currently defined by the Federal Communications Commission ["Commission"], represents high risks for the listening public, existing broadcasters and the Commission itself. To rely on unproved technologies to resolve anticipated interference issues is not representative of either good planning, good policy making, or proper technical planning.

A proposed low power service within current secondary status translator rules makes more sense, when coupled with a step by step process. This process will rely on real world technical data taken in the field as the new technologies evolve. The Commissions main objectives can be achieved with minimal disruption as outlined herein.

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1) Communications Background of Respondent

I have been a volunteer in non-commercial FM radio since September of 1961 and I am still active. I have assisted eleven Connecticut non-commercial stations in various aspects of operation including fund raising, training, tower rigging, preparing FCC applications that included complex directional arrays, prepared engineering presentations in MX'd situations and designed and/or built various studios. I have been involved with the engineering, applications and construction of 8 translator and booster stations of various power combinations and antenna types up to 250 Watt DA. (all pro bono).

I am not the licensee of any station nor have I been a licensee. I do not draw income from any of these activities nor do I sell products or services to any broadcast enterprise. I have no current plan to become a licensee of a Low Power facility should that service become a reality.

I work as a Senior Avionics Systems Engineer for a defense contractor and my employer's corporation has no broadcast interests.

I have a degree in physics from the University of Connecticut and hold a General Class FCC License with Ship Radar endorsement.

Based on my technical background and 38 years of practical experience in non-commercial FM radio coupled with no financial interest, I feel I can offer positive contributions to the Low Power proposal now before the Federal Communications Commission ("Commission").

2) Introduction

I wish to speak against the Low Power service as proposed. I am not philosophically opposed to the Commission's concept of providing a Low Power service. There is a place in American culture and society for such a service, sometimes referred to as eclectic radio. [99-25 Par. 12]

The current proposal is highly disruptive and will result in new expenses for existing licensees, loss of overall FM service to the public, wasted time and energy in policing the new service, new administrative burdens on the Commission, rancor and possibly a lost opportunity for emerging technologies. The Commission's proposal, as stated, represents unacceptable risks to the FM listener.

Rather than speak against the Commission's proposal, I wish to put forward two alternatives that fulfill the spirit for a viable Low Power service.

One option is bold (Option #1), yet offers no impact to current licensees from a new Low Power service. It also opens a new avenue for digital radio to achieve its maximum potential for all licensees. The other option (Option #2) is very conservative yet would help the Commission quickly achieve its goals at much lower risk, lower costs and lower controversy.

3) Historical Background of Low Power & Reserved Band

Over the course of broadcast history there have been several attempts to establish a special reserved spectrum in the broadcast radio services.

The first attempt was in the 1934 (Wagner-Hatfield Bill) when proponents sought to have the FCC declare 25% of the Standard Broadcast (AM) band set aside for non-commercial use. This attempt was ultimately defeated, although some of the motives survived for many years in the form of “community obligations” noted in the license renewal process of commercial stations.

As a “consolation” to the proponents of this failed attempt to reserve AM channels, the Commission did propose a reserved band within the FM band, tentatively in 1938 and 1940, and finally in 1945. It is known as the non-commercial, educational band (the stations will be referred to as “non-coms”).

In the early years, the reserved spectrum drew no formal attention from any specific interest group. It began to be used in exactly the way the Commission now suggests in its current Low Power proposal: Colleges and high school licensees, independent community groups, Low Power 10 watt stations, instructional radio, etc. What today is considered the entrenched special interests of this reserved band was in reality the previous “voices” the Commission hoped to empower in 1945. We can anticipate that in fifty years there will be a new group of “voices” seeking access to crowded airwaves. This is the reality of a finite radio spectrum.

Around 1968, with impetus derived from some early successes in public television, organized groups began to cast an eye on what they considered to be the “fallow” non-commercial FM band. They hoped to establish a “more formal service”. In order to create opportunities for higher power stations, these organized groups petitioned the Commission to begin tightening the FCC technical regulations on the smaller (“lower power”) reserved band facilities, cease licensing of new 10 watt stations and drive the remaining 10 watt stations out of the reserved band. The Commission enthusiastically enacted the proposed tightening of regulations and began moving the surviving 10 watt stations to the commercial band whenever a high power non-commercial applicant applied pressure on them.

The ultimate rule change that drove many of the “marginal” reserved stations off the air or out of the reserved band was the threat of a license counter-file at renewal time for not maintaining a schedule of 12 hour per day. In many cases, these “marginal” stations of the 1970’s were operated by the same type of broadcasters who are today’s Low Power enthusiasts.

It is interesting to note that if the FCC had not ceased the licensing of new 10 watt stations and allowed new ones in the so called “dead spaces” in the commercial FM band (when they opened it up to existing Class D stations), there would be no need to discuss this controversial proposal. The only difference I would have suggested in the 70’s would have been to change 10 watts TPO to 20 watts ERP. This would allow for a single bay circular polarized operation and utilize pre-existing, type approved exciters of 50 watts or more to drive the single bay. This service (2.5 mile radius) can cover a city of 150,000 to 200,000 without much difficulty. The single bay light weight circular polarized antenna is very easy to install. I have assisted with the installation of several 19 watt translators in the

commercial band with better results than I had anticipated. While there were several unsuccessful “petitions to deny” from commercial stations against these translator applications, the licensee of these translators never received a single complaint from any of these commercial stations once the translators went on the air. Two of these translators have been on the air for a combined total of 8 years. One covers about 70% of an urban area of approximately 120,000 and the other covers a locale of about 25,000.

4) General Comments on the Management of the Broadcast Spectrum

In the broadcast arena, radio has never been on an equal footing with television. Typically, radio has been the stepchild of television and worse, the non-commercial reserved channels are orphans. Regulations and new technology thrusts favor Television.

The most recent circumstance of uneven regulation with respect to non-com stations is the lack of a Channel 6 DTV vs. non-commercial radio interference standard. The commission imposed a last minute DTV Channel 6 allocation to New Haven, CT. Without new interference regulations, a Channel 6 DTV filing may leave all the non-commercial stations as well as any future Low Power stations in the CT/Long Island area in administrative and technical limbo. The new DTV station will not suffer but the analog stations will.

More to the point, the Commission plans to turn over more broadcast UHF TV channels to other services, yet the Commission does not give first priority to other broadcast services to take advantage of released UHF TV spectrum. The Commission took a bold step with DTV. The opportunity to take a simultaneously bold and technically advanced step in the radio spectrum was lost when the digital TV plan was rushed through with no parallel plan for digital radio. (see proposed Option 1)

5) A Summary of Commission Goals in MM Docket No. 99-25 includes:

- 1) Allow Low Power stations to proliferate within current FM channels, stimulated by changing technical rules. Some changes may allow new interference to occur.
- 2) Restrictions on existing full power broadcasters in using the relaxed rules to own the new class of stations
- 3) An (unproved) expectation that digital technology will relieve or mitigate the affects of any new congestion that might occur in the FM band
- 4) Allow an opportunity for small local radio with a community “voice” to evolve

- 5) Allow low cost entry into broadcasting along with a reduced administrative burden.
 - 6) Hopefully reduce the potential for commercial trafficking in Low Power license's and CP's.
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Note: The following comments address particular paragraphs in the Commission's proposed MM Docket No. 99-25 and at times the specific Commission requests for comments within specific paragraphs. These responses will be identified by:

examples ... [99-25 Par. 1], [99-25 Par. 14], etc.

6) Alternate Proposals [99-25 Par. 2]

These alternate proposals, made in good faith, offer two diverse solutions to the Low Power proposal.

Option 1 is a bold proposal in the same spirit as digital TV. There is no reason that radio should not be entitled to the same enthusiasm to expand service and allow digital technology to blossom, unfettered by the dilemma to try to cram this nascent technology into existing analog channel space. This option offers something to every current and prospective licensee. (but is not in line with the Commission's position [99-25 Par. 15]).

Option 2 is a conservative stepped approach, design to avoid controversy, rancor and risky experimentation based on the yet unproved digital technology. It allows for a sensible trial period for IBOC and a low risk learning curve for licensing procedures for Low Power operation. It also allows speedy introduction of Low Power and the freeing up of some new channels. Since Option 2 relies heavily on the current translator rules, there are very few unknowns in Option 2.

7) Option 1

If the Commission leaves two or three additional UHF channels in place at the top end of the UHF TV band they could reallocate VHF TV Channels 5 & 6 to enlarge the FM band. The fortunate position of these two TV channels relative to the FM band allows:

- 1) Opening up all FM channels from 200 kHz spacing to 300 kHz thus providing a technically superior opportunity to let IBOC digital technology truly exploit its capabilities and potential.
- 2) A brand new reserved band for Low Power. [99-25 Par. 16] The proposed channel expansion to 300 kHz would still allow 6 extra channels in a new reserved band. (And even a 7th 200 kHz “narrow” channel, if desired)
- 3) Maintain the current integrity of all licensees, in both the commercial and the existing reserved non-com band.

This proposal allows new advantages for each radio interest and without the controversy, congestion and loss of FM service that will follow from the most liberal implementation of the Commission’s proposal. If the Commission can suddenly double the number of TV channels and then give the remaining UHF broadcast spectrum to non-broadcast services, it certainly can give radio “first refusal” to those broadcast frequencies to create an equal opportunity for digital radio.

Commission fears notwithstanding [99-25 Par. 15], this would not relegate only the proposed Low Power facilities to new spectrum. All broadcasters would be on an equal plane in the improved band as a well, through a well managed and timed shift to the new spectrum and channel size. Full power commercial stations moving to new channel size, new spectrum and to digital technology will certainly drive the receiver market.

Commercial broadcasters will have digital technology that worked. The new channel space would allow all types of new sub-carriers and alternate services heretofore not possible.

The original FM channel spacing of 200 KHz was bold for its time. Through farsighted planning over 50 years ago, it allowed broadcasters to easily move to stereo as well as other multiple sub-carrier capabilities. The success of FM should not be set back by attempting to “patch” in IBOC into the existing 50 year old FM channel space. The same technical foresight is called for today.

The current non-commercial broadcasters would keep the integrity of a 20 channel reserved band and also enjoy the expanded technology as the commercial stations.

Low Power proponents would have their own reserved band. The original reserved FM band success over the last 50 plus years demonstrates that a new reserved band [99-25 Par. 16] is an excellent way to institute this new service. A reserved Low Power band avoids conflict.

One argument against new spectrum may be the compatibility issue that arose with such innovations as color TV and FM stereo [99-25 Par. 15]. In those days the cost of TV and radio sets were measured in many weeks, if not months of the average workers earning capability. Today, through injection molded plastic, factory automation and microchips, the cost of quality receivers has plummeted to fractions of a week’s salary for almost everyone.

Further, the concept of obtaining entertainment appliances in the poorest of homes has shifted from one of expected frugality and “doing without” to one of “a social necessity”. The Commission’s compatibility philosophy no longer carries the same weight and burden as it did in early 1950’s and early 1960’s. Today’s attitudes about the purchase of new technologies in home entertainment products are much different.

8) Option 2

This proposal is the alternative that allows for a conservative approach. It achieves almost all the basic principles the Commission proposes. Option 2 is based on one new type of FM service within current translator rules yet it covers almost all the power ranges of the Commission’s proposed three classes.

This option suggests the Commission establish an IBOC test period with clearly defined technical goals. Even with this proposal, introducing IBOC will not slow down some “Low Power” stations from going on immediately.

Concurrently, I suggest a 3 to 5 year test period to prove out IBOC and accumulate meaningful field data. However, IBOC must first be proven in the existing crowded non-commercial reserved band before “originating translators” are to be allowed in FM channels 201-220.

Step 1. Keep all the current translator technical rules in place with one exception:

- a) Immediately eliminate the 3rd adjacent requirement but keep the second adjacent requirement. [99-25 Par. 42 through 48]
- b) Keep all the other current translator technical rules, including such issues as IF [99-25 Par. 28], exposure, protections [99-25 Par. 38, 41], station secondary status, white space waivers, etc. Provide new applicants with pre-calculated charts such as shown in RF Exposure and Distance in 15) herein.
- c) Do not contemplate the elimination of 2nd adjacent requirements until IBOC is proven in the field. [99-25 Par. 42, Par. 37, 43]

Step 2. Keep all the current translator administrative and ownership rules in place, except as follows:

- a) Allow for translators, at the option of the applicant, to either originate local programming [“originating translators”] or rebroadcast an existing station [“re-broadcasting translators”]. The chosen status at application time would then remain with the licensee that made the application until the facility was abandoned or sold to a new licensee. At an ownership

change, the status could be re-selected by the new owner provided all approved conditions were met for the chosen type.

b) Originating translators must have non-commercial status. [99-25 Par. 2, Par. 19, Par. 24]

c) Until IBOC is tested and proven in the already crowded non-com band: Only allow originating translators in the commercial band where commercial stations now meet full mileage separations.

d) Before IBOC is tested and proven: Do not allow originating translators to “crowd” short spaced commercial FM stations in the locations where the short spaced contours overlap.

e) All future “re-broadcasting translators” must be within 80 km from the originating station. Currently licensed long distance translators would be grandfathered, but could not be reassigned to another local station thus attempting to meet the new 80 km rule without reopening the channel to all comers. Grandfathered Long distance translators could not be automatically sold as a “tack on” facility if the originating primary station is sold or transferred. That translator channel would be re-opened to all comers if it fit all the implemented originating rules. Grandfathered re-broadcasting translators already within 80 km of the primary station could remain affiliated with the primary station being sold or transferred.

f) If desired by the Commission, the “originating translators” could be broken into two or three sub-classes. I see no pressing need to make these class distinctions and it just adds unnecessary red tape. If the Commission sees good reasons to have subclasses for administrative distinctions within Low Power originating translators, they can be implemented within the current translator technical standards. [99-25 Par. 34]

Class 1: 120 to 250 watts ERP

Class 2: 13 to 80 watts ERP

Micro: 4 to 10 Watts ERP.

[I propose 4 watts ERP as the minimum for local origination. It is based on practical experience and is an economical ERP level to construct. One watt provides no useful blanket service, even for very limited areas. The 1 watt issue is discussed further in the general comments in 22) herein.]

Step 3. At the appropriate time, authorize a viable IBOC system and thoroughly test it on:

a) the currently crowded non-commercial band and the commercial band with the third adjacent relief in place.

b) Allow for a reasonable IBOC test period to gather and study real field test data. (This technical test period will allow the commission to simultaneously iron out problems with licensing “originating” Low Power stations within the current translator rules.)

Sept 4. When IBOC is proven and license processing ironed out, look into the feasibility of dropping 2nd adjacent requirements based on solid field data.

Sept 5. With IBOC proven in the crowded non-commercial band, consider the feasibility of allowing “originating translators” between FM Channels 201 - 220.

This option provides many benefits but it does not advance the state of the art the way Option 1 does. Option 2 allows:

a) A very fast implementation of Low Power service since the vast majority of the rules are already in place. This plan could be implemented even faster than the Commission’s proposals.

b) Existing broadcasters already know about and deal with the current translator technical standards up to 250 watts, the only exception being the new third adjacent relief. There would be few surprises.

c) IBOC developers will not be dealing with the uncertainties of aggressive spectrum over-crowding.

d) Decisions on IBOC technology will be made with real field data and not conjecture.

e) The modest number of new channels created by 3rd adjacent relief will actually be a benefit. The commission will be able to “test” its ability to process the expected deluge of applicants and iron out processing bugs. It will be easier to monitor the impact of the new class of stations on current FM listeners and FCC administration.

It is unwise to rush to Low Power primary status without IBOC tested and in place.

f) This phase-in type of plan can have stepped milestone dates: i) drop 3rd adjacent requirements ii) license Low Power originating translators in the commercial band iii) IBOC implementation, iv) 2nd adjacent relief, v) finally, primary status considered.

g) Low Power proponents immediately obtain freed-up spectrum and a faster track to Low Power service.

9) General Comments

The following comments are based on the possibility that all the Commission's proposals are implemented.

10) On the Proposal to Loosen Standards [99-25 Par. 35, 70]

The proposal to reduce standards for the new Low Power service is not recommended.

The Commission hopes that one of the benefits to flow from a new Low Power band would be to provide a training ground for broadcast. Lowering standards will send the wrong message. For similar reasons, it is also prudent to keep the current broadcast programming regulations in place [99-25 Par. 72].

I was involved in the establishment of several Class A non-commercial stations in the early 1970's. This was in a time of tightening FCC non-commercial band regulations. These stations were built without public funds and without any major private donations. It required the rehabilitation and rebuilding of old donated broadcast equipment and door to door fundraising. The necessity of meeting technical proof of performance and using type approved equipment was well understood, as well as meeting the FCC's administrative regulations. No special dispensations were expected in our efforts to establish an inexpensive community station in the reserved band.

Secondly, the FCC's proposed plan would certainly increase congestion in the FM band, not reduce it. Increased congestion requires more attention to technical standards, not less. It makes no sense to propose an increase in spectrum congestion and simultaneously propose to loosen the rules.

The full-service non-commercial stations that we built in the early 1970's on door to door donations are still in operation today. They have been successful in meeting community needs. It was not necessary to lower standards or make special concessions in the regulations to establish a modest station.

The only place for loosened standards [99-25 Par. 50] would be in an exclusive reserved band for Low Power. This is one of the merits of having a reserved band as noted in Option 1.

Some proponents of Low Power consider government imposed standards as unnecessary. By analogy, one of the unwritten benefits of the CB band is that it provides a spectrum for some citizens, whose CB operations might prove disruptive if they were the amateur bands.

11) The proposal to License Previously Sanctioned Pirates [99-25 Par. 64, 65 & 67]

It is ill advised to allow previously sanctioned pirates to become licensees. If the FCC decides to change the rules for pirates, it should apply the same standard across the board to all previously denied broadcast applicants for similar offenses. When I was involved in training young people and adults for broadcasting in the reserved band, I always insisted that they keep the rules. Those who refused to follow the rules, even as volunteers, were asked to leave. Making special concessions sends the wrong message and it dilutes the very "educational value" the FCC hopes to achieve by the Low Power proposal. If the commission seeks to increase the congestion in the band, it is unwise to simultaneously lower the requirements for personal integrity. Relying solely on new unproved technology to keep operators "honest" is a not a good idea.

A better place for loosened standards on previously convicted pirates would be in a special reserved band for Low Power. [see Option 2]

12) General comments on IBOC [99-25 Par. 17, 49]

IBOC, like other digital systems, provides many benefits: multiple channel capability, noise free quality sound, dynamic range, control commands, etc. The benefits of digital arrive from the tremendous volume of active devices and lines of software code that can be accommodated on tiny micro-electronic chips. In this area, analog design cannot compete.

The proponents of IBOC digital in the present band are concerned with preserving the existing FM investments and status quo rather than in pushing the frontiers of technology. (This situation is similar to the FM story in the late 30's and 40's when the FM technology was stymied by powerful vested interests - A History of Broadcasting in the United States - Vol. 2 - The Golden Web - Erik Barnouw 1968).

Trying to make IBOC work within the current FM channels is nothing more than "patch" engineering. To truly take advantage of the benefits of digital technology would require a bold approach for radio. [see Option 1] Some would say it is not practical to propose such a radical move. Doubling TV channels and allowing for growth to all digital TV was a bold move. Indeed, some independent operators will probably not be able to make the transition to DTV and yet the proposal became reality. It is still possible to consider such a move as outlined in Option 1.

Viability of IBOC, even without this Low Power proposal, relies heavily on the mileage separations now in place for commercial FM. The FM mileage separations create the dead space the Low Power proponents are relying on for new channels and IBOC enthusiasts for a workable digital service. Unfortunately, non-commercial radio barely comes into the discussion of IBOC technology, even though it will be the worst case scenario for proposed trials. Any discussion of IBOC, with or without a Low Power service in place, must include a successful demonstration in the crowded reserved band such as experienced in the Northeast. If the Commission requires a workable noncom demonstration of IBOC, then IBOC will certainly work in the “mileage separated” commercial band. Further, IBOC would also pass muster for the Low Power proposal. Having a graceful degradation solution for IBOC digital service is not a workable option for problematic non-commercial stations and would relegate them to technical second class status.

13) On the Proposal to Remove 2nd and 3rd Adjacent Interference.

The Northeast is one of the most difficult regions to engineer new non-commercial stations. Here, non-commercial stations are crammed in utilizing directional antennas to the point of interfering contours touching service contours at multiple points of the compass. This would be the most severe environment for testing proposed 2nd and 3rd adjacent relief. I have been involved with many non-commercial stations and translators in this region. [It should be noted that commercial stations do not share the same degree of “tight” contour clearances with the non-commercial stations, even in the cases of the older short spaced commercial stations. That is, they do not share this short spaced condition with multiple adjacent station as experienced in the non-commercial band].

It has been my practical field experience that 3rd adjacent interference no longer exists. I have easily copied distant 3rd adjacent stations within 100 ft of a 19 watt translator on modest receivers. On the other hand, second adjacent interference still matters. I have experienced several instances where 2nd adjacent stations caused some problems to the channel of interest.

I have studied predicted field strength plots of these 2nd adjacent interference scenarios and they do not tell the complete story. Computer generated predictions alone should not be relied on to make this judgment. The plots give good estimates as to the amount of interference that statistically might be present in a given area, but not the absolute conditions that ultimately result.

At this time I would endorse the elimination of the third adjacent interference requirement but not the second. The elimination of the third adjacent requirement should be across the board for all classes of service.

Relying on a nascent and unproved technology, such as the proposed IBOC digital signal, to resolve adjacent interference is not good technology planning. (See General Comments on IBOC) The case for removal of the third adjacent requirement is already well proven in

the analog world through practical experience. IBOC can be safely tested with the cancellation of the third adjacent requirement.

Once IBOC is field proven with third adjacent relief in place, it can then be then judged on second adjacent. It would be unwise to rush into untried 2nd adjacent relief and then have it not work. It would be better to debug any potential third adjacent problems first and minimize any impact from IBOC “experimentation”. It will be extremely disruptive if second adjacent relief did not work and it causes increased IBOC problems.

It has been only recently that I attempted to place a very low power third adjacent class A station just inside the 1 mV/m contour of another large noncommercial station where that station was already receiving first adjacent interference from another powerful non-commercial station. In rebuttal, the Commission indicated due to the statistical nature of FM signals ... 3rd adjacent interference could still be anticipated. Apparently this no longer applies.

14) Using the non-com band. [99-25 Par. 2]

It is not recommended that the non-com band be used for any new Low Power class at this time. This is true even if the Low Power class of stations are required to be non-commercial facilities. [see Option 2]

The non-commercial band does not have the added protection of the mileage separations that are present in the commercial band. Relying on unproved IBOC digital technology to resolve unforeseen problem is not realistic and offers too high a risk within the reserved band.

First, IBOC technology needs to be thoroughly tested in the already crowded non-com band before it is accepted for general FM band usage. [see Option 2] Once IBOC is proven for commercial and non-commercial stations alike, decisions on reduced interference standards can be contemplated. Important decisions can now be made on hard data and not conjecture.

15) RF Exposure Issue [99-25 Par. 74]

RF exposure at the proposed operating levels of the Low Power class is not a problem of high energy. The dilemma comes from getting too near to the antenna for the type of operation envisioned by the Commission. It will include very modest stations where it must be anticipated that people will come very close to the radiating element.

To reduce the burden of calculations on the Low Power licensees, the commission can come up with a simple table of the exposure levels that have already been determined in

English units. (metric can also be included) The licensee can now simply look up the distance they need to avoid having human exposure. Signs can be posted at this distance.

An example showing partial “proposed Tables”:

[the Data is for example only]

Distance to Safe Levels Straight Out from the antenna [F = 1]

	Dual Polarization		Single Polarization	
	Distance to 1 MV/m	Distance to 0.2 mV/m	Distance to 1 mV/m	Distance to 0.2 mV/m
4 Watts	20 in.	46 in.	14 in.	32 in.
10 Watts	32 in.	72 in.	23 in.	51 in.
19 Watts etc. etc.				

Distance to Safe Levels Downward from the antenna [use F = 0.6]

	Circular Polarization		Single Polarization	
	Distance to 1 MV/m	Distance to 0.2 mV/m	Distance to 1 mV/m	Distance to 0.2 mV/m
4 Watts	12 in.	26 in.	9 in.	19 in.
10 Watts	19 in.	43 in.	14 in.	31 in.
19 Watts etc. etc.				

Exposure Table Notes:

- 1) Since the levels are so low, using F= 0.6 for the downward energy is conservative and a good average number.
- 2) Low Power Stations of 100 watts or less should not be required to calculate and add their energy when other higher power stations are co-located.
- 3) For any low ERP in between the levels given in the example tables above, the next higher level distance can be used.
- 4) If a licensee has a special situation that needs relief or if there are multiple Low Power facilities at the antenna site, they can use the exact antenna F number for downward exposure. They would be required to perform each station’s exposure calculation in percent and add them together

16) Main Studio & Public File [99-25 Par. 73]

The problem for very Low Power stations will be in trying to find a studio location near the antenna. This will be especially true in large cities where more than one micro station may fit on the same channel or 1st adjacent with mileage separations imposed. Locating the studio within the 60 dBu will not always be realistic. Being too far away from the micro power station will also be unacceptable. Using the 54 dBu (50-10) allows studio location flexibility. The 54 dBu (50-10) distance is typically one and one half times the distance to the 60 dBu (50-50) . The studio could easily achieve off-air monitoring within the 54 dBu contour.

Requiring some minimum public file is necessary. Basic ownership information and basic engineering data (co-ordinates, height, power) are required. It should be noted that if these stations are non-profit, IRS 501c3 non-profit rules already require the group to maintain a public file on their tax exempt status papers. They can keep the minimum FCC information in the same location at the studio. Having a public file will assist primary stations and the public if there are problems with the Low Power operation.

Keeping a simple public file provides good training practice. One of the Commission goals for the Low Power service is to provide a training ground.

17) Windows and Mx'd applications

It makes no sense to consider any situation where the Commission has to deal with Mx'd applications in the Low Power class. First come - first serve in the current translator secondary class has worked well. It is not "broken" and does not need to be "fixed". It is difficult to conceive the FCC having the staff or time to resolve conflicts such as 23 Mx'd micro stations all filing for the same location at the same time and multiply that times 10,000 locations across the country.

Electronic filing has merit. A good feature would be a real-time database screen on the FCC Website that gives current status of the active Low Power applications. For example (the data was made up for this proposed web page example):

Example:

[the Date and Data is for example only]

Table of Current Low Power Applicants
(Last updated 11/12/99 4:58PM EST)

Ch 264 etc.

CT - Elmsford - 41° 17' 18" - 73° 02' 16" - 4 watts ERP
20 feet AMSL - 3/17/99 9:30 AM

CT - Fordsville - 41° 21' 10" - 72° 58' 01" - 10 watts ERP
30 feet AMSL - 3/17/99 2:30 PM

and so forth

The data could also contain the name of the group or person filing and if the application has been accepted, returned or granted. Properly designed, the electronic filing could update the table in real time.

The FCC web site could also automatically check the mileage separations for another applicant to see if they fit and thus avoid an unnecessary filing. [99-25 Par. 37, 39, 40, 41] The applicant could enter his coordinates, height, ERP and click on a "send key" to get an answer on clearance to all applicants and stations in his/her area.

Another page could be added where the applicant could look up simple distance clearances ahead of time for the Low Power class(es) of stations. X and Y axes could contain raw numbers that represent height times power (30 feet would be the minimum). For example, ten watts times thirty feet would give 300. Let us assume the other co-channel Low Power station of concern was also ten watts at thirty feet. The applicant would look up 300 on the X axis and 300 on the Y axis and see a FCC pre-calculated value such as 8.4 miles.

18) Boosters and Translators for Low Power [99-25 Par. 33]

Proposing boosters and translators for Low Power stations goes against the concept of Low Power service. Low Power implies the intent to allow a limited service with a multitude of channels available for different voices. This proposal would create the same problem associated with translators that operate beyond 80 km from the primary station. Long distance translators were not a good idea. They ended up creating "networks" for one licensee. Translators for Low Power stations would consume limited channels for new applicants. In addition, I proposed the cessation of allowing new long distance repeating translators. [see Option 2]

19) Auxiliary Services for Low Power [99-25 Par. 20]

I do not see much value in auxiliary services for micro-broadcasters based on costs, area of service coverage and close proximity of the transmitter. Auxiliary services may be viable for those above 10 watts for remotes, studio transmitter links, etc. The auxiliary services also suffer from inadequate spectrum space so it would be wise to limit auxiliary services to the higher power level [13-250 watt] Low Power stations.

20) Grandfather Existing Translators [99-25 Par. 33]

It would be unwise for any new Low Power station, regardless of class, to bump existing translators or boosters off the air. Many of these translators were established by small donations from a large number of listeners motivated in obtaining service that was not available anywhere else. They would be extremely unhappy with the loss of service.

Since I do not condone granting primary status to any Low Power station at this point, that is not my issue. Originating translators should have equal status with re-broadcasting translators [99-24 Par. 33]. The only exception would be is when current long distance translators [>80 km] become available, then local originating translators should have priority.

21) Antenna height limits [99-25 Par. 33]

There are good reasons to allow antenna height limits. However, one special case must be considered. A Low Power applicant may be able to obtain donated tower space on a tall tower. This could happen in a locale where attitudes and zoning are against any type of new radiating antenna, no matter how modest. As long as the commission does not allow the same privilege it now allows to personal communications over irrational local zoning regulations, then relief from the FCC may be required with respect to any proposed height limits.

22) The micro radio class [99-25 Par. 34, 36]

The Low Power of this proposed class of station has value with respect to providing a small local community service. The proposal of 1 watt ERP is too low. This energy level would not provide a guarantee of assured service even very close to the antenna. If there is a special designation for micro-power, I propose a level no lower than 4 watts as the usable minimum ERP and maximum of 10 watts. My experience with a 4 watt translator noted that it provided about 0.75 to 1 mile of reliable saturated service with most residences being of wood frame design. I have no reliable experience with steel and concrete structures at the 4 watt level but 1 watt would certainly be a disappointment to any micro power novice trying to serve large steel and concrete apartment buildings.

Estimated RF Cost for this facility (4 watt) would be [99-25 Par. 24]:

1 bay circular polarized antenna	\$350 - \$750
Chimney mount	\$30
10 foot pipe	\$7
Coax with connectors	\$25 - \$100
Transmitter 10 Watt TPO (type approved)	\$1500 - \$3000
Cost range	<hr/> \$1912 - \$3887

Audio equipment could be any consumer grade commercial audio mixer, mic, CD, cassette combination setup. \$350

Minimum operating expenses:

Royalties	\$650/yr.
Phone	\$60/mo. Local calls
Electric	\$30/mo.
Maintenance/repair	\$100/yr.

Insurance as deemed necessary by the applicant. It should be noted that homeowners insurance will most likely not cover any broadcast operation, even micro power:

Liability and Libel/Slander rough est. \$700 - 1000/yr.

23) Non-Commercial status for Low Power levels [99-25 Par. 2, 18, 19, 69]

If it is the Commission's intent to reduce the probability of trafficking in Low Power licenses, then a non-commercial status would be a requirement. Non-commercial status would also:

- 1) Be less disruptive to primary commercial operators.
- 2) Increase the opportunity for diversity of programming.
- 3) Still allows for program underwriting and grant mentions to generate donations.
- 4) Avoid the need to hold an auction

(This position should not be considered an endorsement of allowing Low Power originating stations with reduced standards in the current reserved FM band until IBOC is proved to be workable.)

24) Transmitter Certification [99-25 Par. 35] and modulation monitors [99-25 Par. 51]

Type approved transmitters should be a prerequisite to avoid any danger of spurious emissions from a Low Power - low cost enterprise. It is not wise to consider otherwise. I have had experience in two situations where 10 watt class D stations caused interference to other non-commercial stations. It was very difficult to get them to correct the situation and these 10 watt stations were already using "type approved" equipment.

A modulation monitor would make no technical or economic sense for a Low Power class of station. Even the definition of over-modulation brings on technical debate with primary stations as well as disputes with the FCC. It would be futile to impose a modulation monitor requirement on Low Power. Built in modulation limiters within type approved transmitters is the only workable solution.

25) No Primary Status for Low Power stations [99-25 Par. 22, 29 & 38]-priority of applicants [99-25 Par. 21]

There should be no primary status for Low Power service at this time. I propose one simple class for all Low Power Services [99-25 Par. 22]. [See my Option 2] If it is decided that more than one class is required, they should all be secondary status at this time. It is premature and high risk to allow a new Primary class of station until IBOC is ready and proven.

There should be no "pecking order" of licenses within the Low Power class as well as with existing re-broadcasting translators, boosters and grandfathered 10 watt stations. All these facilities should be on an equal footing. If there are different priorities for each class, then bumping of facilities will become endemic. It will not take long for proponents of a higher ranked Low Power station to zero in on an existing lower class channel since their very existence will flag a potential clear space for another class of station. The constant bumping of channels will create administrative burdens for the FCC and complaints from listeners.

25) Ownership [99-25 Par. 60]

I disagree with national ownership. This goes against the concept of a low power service. The temptation to establish large national chains and groups under one owner will be great. If the local station cannot sustain itself, new parties will be ready to step in to try their hand at a viable local service. This is what the low power proposal is all about.

26) Local programming [99-25 Par. 68]

For the same reasons given in 25) above, at least 25-50% of the program material should be locally produced.